

# Solution Brief



## Dukosi DK-NFLNK™ Communication Solution for Battery Systems

DK-NFLNK™ is a highly reliable battery communication solution designed to upgrade modular battery architectures based on multi-channel AFEs to a safer and more scalable architecture.

DK-NFLNK uses one DK8503 Node assigned to each battery module; the DK8503 device is AFE adaptable, enabling seamless integration with a wide range of cell monitoring solutions. By leveraging Dukosi's safe, secure, and reliable near field connectivity, DK-NFLNK delivers inherent isolation and eliminates complex wiring harnesses, while ensuring data integrity.

DK-NFLNK uniquely allows easy scaling of module count without requiring system revalidation, enabling battery designs to adapt quickly to global market or supply-chain changes.

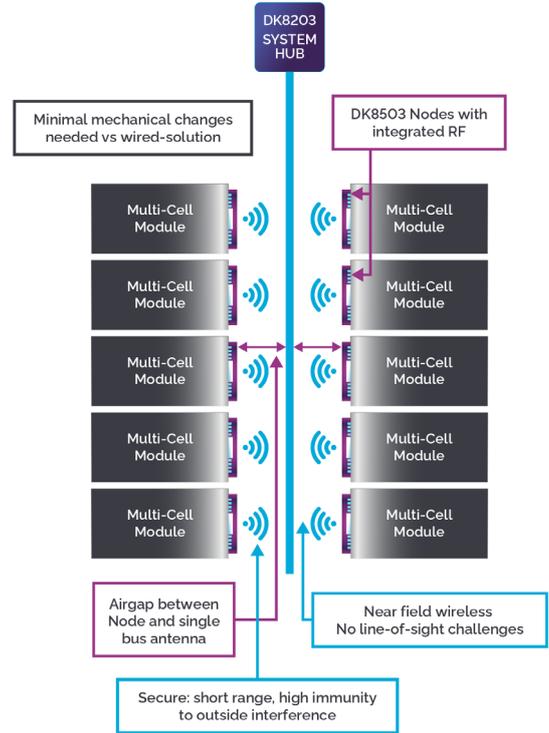


Fig. 1: DK-NFLNK System Diagram

The Dukosi DK8203 System Hub forms a robust star network with all of the DK8503 Nodes for independent secure communication. Each Node operates synchronously and the System Hub interfaces directly with the BMS host processor.

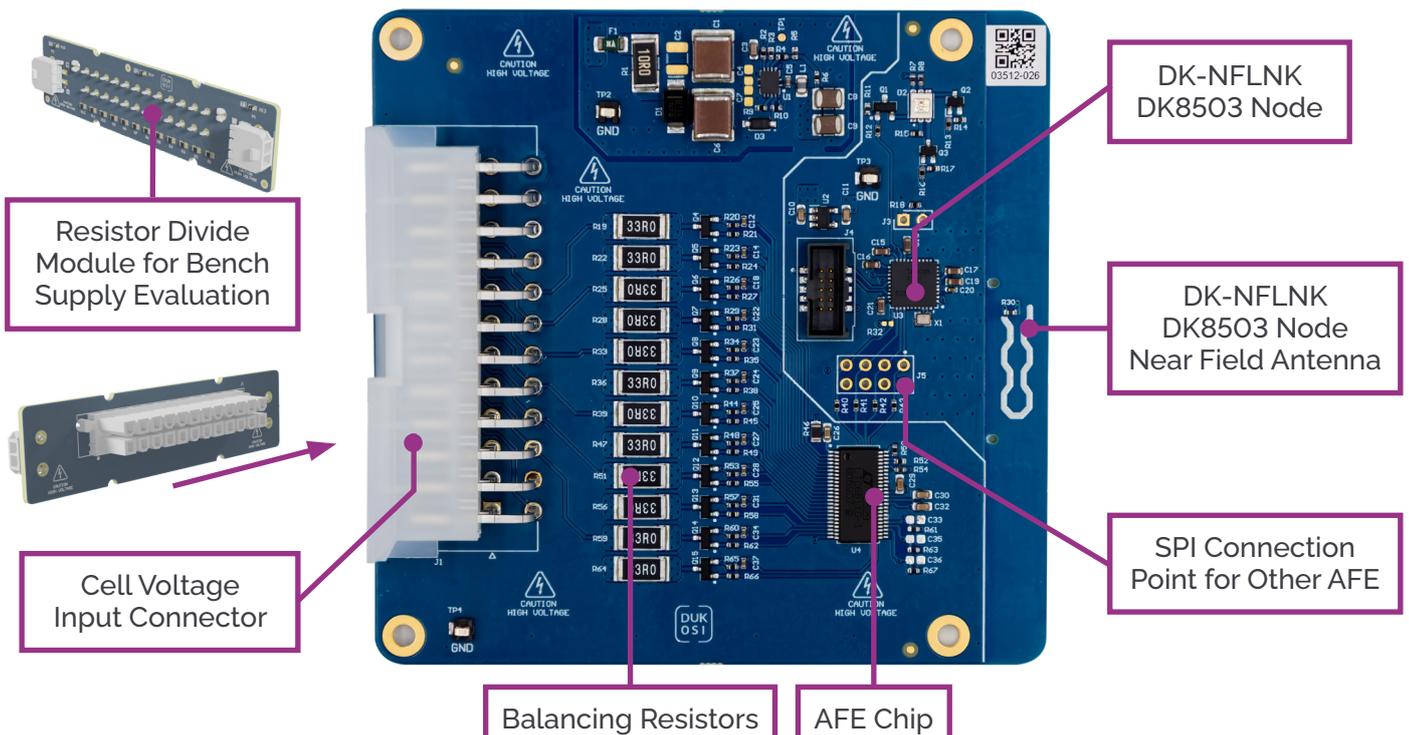


Fig. 2: DK-NFLNK Node EVK Board

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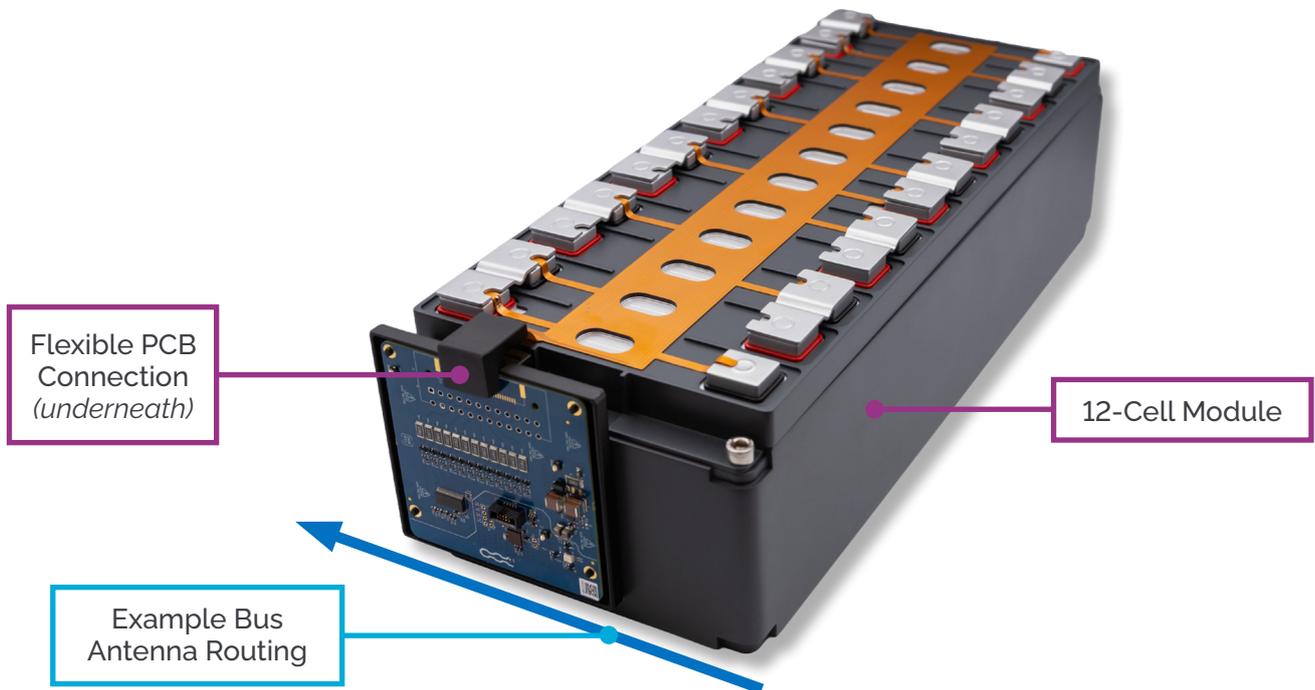


Fig. 3: Module integration example using a DK-NFLNK Node EVK Board

### Dukosi Near Field Connectivity and Star Network Configuration Advantages

DK-NFLNK uses Dukosi's proprietary near field communication protocol based on C-SynQ® to enable secure, robust, and reliable connectivity within a battery pack. Unlike other intra-battery communication systems, Dukosi's protocol is designed from the ground up for safety-critical environments in large, multi-node battery systems. It provides deterministic communication with essential data synchronicity from all cell modules to the BMS host processor.

Compared to wireless BMS solutions that use far field technologies, near field communication operates with extremely low power RF that generates minimal environmental noise and signal reflections. This reduces the risk of interference and eliminates the need to repeat RF analysis, or redesign the system when pack designs change, such as when busbar or cell layouts are modified, or when additional cooling or thermal barriers are introduced. In addition, because near field RF does not require line of sight and DK-NFLNK uses a simple single bus antenna, the mechanical architecture is not constrained by RF communication requirements.

The Dukosi star network configuration ensures that each DK8503 Node communicates directly with the DK8203 System Hub. As a result, any error state on one Node is immediately identified, and does not affect the ability of other Nodes to communicate with the BMS.

The same BMS host processor and DK8203 System Hub can be used across multiple pack designs, with consistent reliable RF performance. No changes to the DK-NFLNK library are required, and the same API can be used across all configurations.